

Preliminary Agenda
***Energy Report* Committee Workshop on Scenarios and
Uncertainties Relating to the Electricity Resource Data
Requests for the 2005 Integrated Energy Policy Report**

Tuesday, February 15, 2005

Welcoming Remarks

Commissioners John L. Geesman and James D. Boyd
2005 Integrated Energy Policy Report (Energy Report) Committee

Introduction and Agenda Review

Al Alvarado, Project Manager for Electricity Systems Analysis

Integration of 2005 *Energy Report* with 2006 CPUC Procurement

Manuel Ramirez, California Public Utilities Commission

Overview of Proposed Electricity Resource Plan Scenarios and Uncertainty Jim

Woodward, Electricity Analysis Office

Comment and discussion

Closing Remarks

Commissioners John L. Geesman and James D. Boyd

The proposed electricity resource plan scenarios and uncertainty analysis that Load Serving Entities are requested to submit are provided in the following pages, intended for discussion at the workshop.

Attachment A

Staff proposal from Forms and Instructions¹

(p. 53 – 59)

Ten-Year Resource Plans

This section of the forms and instructions provides the Energy Commission staff proposal for additional information relating to key scenarios and uncertainties that Load Serving Entities (LSE) will be required to file by April 1, 2005. The Energy Report Committee plans to hold an additional workshop on February 15, 2005 to review this proposal for additional information. Following that workshop, the Energy Report Committee will issue an order that directs the relevant parties to file that additional information by April 1, 2005, including additional direction or revisions and errata to these forms and instructions that are necessary. The Energy Report Committee's order will be brought back to the Energy Commission for adoption.

Reference Cases, Costs, and Scenarios

All LSEs that served peak retail loads of 200 MW or more in either 2003 or 2004 are asked to submit a 10-year electricity supply plan. The Capacity Resource Accounting Table (CRAT) (Form S-1) and the Energy Balance Table (Form S-2) are essential components of this 10-year plan. The Energy Commission asks each LSE to prepare a "reference case" which includes the numbers on Form S-1 and S-2. This reference case is a resource plan that "assumes away" numerous uncertainties. For example, in the reference case, investor-owned utilities (IOUs) are asked to assume that Direct Access (DA) load that they no longer serve will continue to be served by other providers, and that no current bundled customers take DA service.

This reference case narrative should include assessments of the major uncertainties which influence resource planning decisions, along with some discussion of their actual influence on the reference case resource plan.

The IOUs are asked to submit their preferred resource plan in addition to the reference case. The preferred resource plan includes a narrative section discussed herein, and a full set of electricity supply forms (S-1 through S-5) that incorporate the preferences, assessments, strategies, and judgments of the IOU. For example, the instructions for the reference case ask IOUs to include certain assumptions about departing load, energy efficiency, and renewable energy procurement. If an IOU prefers to use a different target (or a different range of numbers) in its resource plan, those metrics should be explained in the narrative of the preferred resource plan. The preferred numbers should be used on a second set of forms.

¹ The full name of this report is *Forms and Instructions for the Electricity Resources and Bulk Transmission Data Submittal*, which can be found at:
http://www.energy.ca.gov/2005_energy policy/electricity_forms/index.html

All municipal utilities (munis) are requested to submit the most recent annual report to their customers pursuant to Public Utilities Code Section 387(b).

Resource Plan Costs

The Energy Commission asks IOUs to provide estimates of the annual costs of meeting load obligations for the reference case resource plan. This should be the “all-in” generation cost, plus the transmission and delivery cost. These costs should include but are not necessarily limited to the variable costs of operating utility-owned generation, contract costs, and the net revenue from activity in wholesale markets. If an IOU is submitting a preferred resource plan along with a reference case, the IOU is asked to provide annual cost estimates of the preferred resource plan as well as the reference case.

For all LSEs, any additional, significant and quantifiable costs which facilitate comparisons between the reference case resource plan and additional scenarios should also be presented. Significant costs whose determination is beyond the scope of analysis requested should be discussed.

In providing their projections for both the reference case and the accelerated renewables scenario, the IOUs, Los Angeles Department of Water and Power (LADWP) and Sacramento Municipal Utility District (SMUD) should describe the potential cost (direct costs, additional transmission, etc.) to ratepayers of meeting these Renewable Portfolio Standard (RPS) goals. These LSEs are also asked to describe barriers which are limiting their ability to implement RPS policies, including barriers to achieving specific RPS targets. These LSEs are asked to explain what might be done to reduce, overcome, or better assess each such barrier. IOUs are asked to discuss how procurement of additional intermittent resources could affect or impact the remainder of its portfolio.

Accelerated Renewables Scenario

In its 2004 *Energy Report* update, the California Energy Commission adopted the following recommendations for achieving ambitious renewable energy goals:

The state should enact legislation to require all retail suppliers of electricity, including large publicly-owned electric utilities, to meet the accelerated 20 percent eligible renewable goal by 2010 and a longer-term goal of 33 percent by 2020, using common definitions of eligible renewable energy. In addition, the state should enact legislation that allows the California Public Utilities Commission (CPUC) to require Southern California Edison (SCE) to purchase at least one percent of additional renewable energy per year between 2006 and 2020, reaching 25 percent by 2010, 30 percent by 2015 and 35 percent by 2020.

In order to assess the implications of the recommendations for this new legislation, Pacific Gas & Electric (PG&E), San Diego Gas & Electric (SDG&E), and the two largest

publicly-owned electric utilities (LADWP, and SMUD) should provide an alternate case that has 28 percent of retail sales served by eligible renewable energy² by 2016 (28 percent is the 2016 value for the 33 percent by 2020 target). Southern California Edison is asked to provide and assess a scenario that has 31 percent of retail sales served by eligible renewable energy by 2016.

All the LSEs named above are expected to provide a plausible projection of the technologies and locations (using forms S-1, S-2 and S-3) for generic renewable resources that would be needed to meet the requirements in this scenario.

Local Reliability Areas Scenario

The IOUs are asked to present a scenario in which they procure sufficient resources in the California Independent System Operator's (CA ISO) Local Reliability Areas (LRA) to meet local deliverability requirements. While these requirements have yet to be determined, a reasonable starting point would be to assume that in 2006 the IOUs would contract with those resources under Reliability Must Run (RMR) contract in 2005 and would continue to do so until and unless (a) transmission upgrades reduce the need for capacity and generation, or (b) the utility constructs new capacity in the LRA or enters into a long-term PPA with same.

This scenario requires that the IOUs make projections regarding the construction of new capacity in local reliability areas in their service territory. The incentive for IOUs to build or contract with such capacity depends in part upon the expected costs of contracts with existing resources; the annual fixed revenue requirements as stated in the 2005 RMR contracts should be used to inform those estimates.

The IOUs are also asked to discuss the transmission implications of this requirement, *i.e.*, the impact of these local reliability procurement constraints on the costs of meeting load obligations may not only encourage the construction of new facilities, but transmission upgrades which eliminate or reduce the need for capacity within the LRA. In short, the IOUs are asked to compare the cost of contracting with existing resources, building a new resource in the LRA, and increasing the transfer capability into the LRA.

Topics of Special Concern

Potential Impact of a GHG Adder on Bid Evaluations

The CPUC decision (D.04-12-048) of December 21, 2004 in R.04-04-003 requires that the IOUs apply a greenhouse gas (GHG) adder to bids received in response to future solicitations for energy and capacity, as well as to consider GHG emissions in their long-term planning process. The value of the GHG adder is to be determined in R.04-04-025 in March 2005.

² Public Utilities Code Section 399.12 (a)(1-4).

IOUs are asked to submit a discussion of the potential obstacles, benefits, and impacts of using GHG adders to influence future procurement choices. IOUs are asked to discuss how an adder for carbon dioxide emissions might be used to incorporate externality costs from global warming that can be associated to fossil fuel use. A reasonable range of values should be discussed, from at least \$7/ton CO₂ to as much as \$25/ton.

Qualifying Facility (QF) Extensions

The IOUs are asked to assess potential impacts of extending all or nearly all QF contracts for the duration of the planning period. This scenario is an alternative to the individual IOU assumptions about QF renewals in their reference case, for which the IOUs are asked to submit estimates of future QF generation costs. The IOUs are not asked to estimate cost differences between their reference case and the blanket QF renewal scenario. The IOUs are mainly asked to indicate how future resource procurement might be affected given continued purchase of must-take energy from all existing QF resources.

Sensitivity to Natural Gas and Wholesale Electricity Prices

The Energy Commission requests that the IOUs provide the natural gas and wholesale electricity price estimates used in their analyses. IOUs are also asked to submit the information on natural gas and wholesale electricity price forecasts used in simulations. Wholesale electricity price estimates should be consistent with said gas prices. Natural gas prices should be based on current forward prices in the near-term, but may, at the utility's discretion, be based on a fundamentals model over the longer-term. Should such a model be used, any significant differences between forecasted prices and those indicated by current forward prices and their extrapolation should be explained. Should an IOU use yet another methodology for determining long-run gas prices, it should be explained in documentation which accompanies the price forecast.

The IOUs are asked to provide an estimate of long-run changes in natural gas and wholesale electricity prices, and how these two indices may affect the cost of meeting their load obligations. Bounding estimates should be based on prices in the tenth and ninetieth percentiles. The resulting effects on assumed wholesale electricity prices should reflect appropriate input price elasticities.

Major Uncertainties and Risk Analysis

The Energy Commission asks LSEs to provide narrative and qualitative assessments of how major uncertainties would impact either their reference case or their preferred resource plan. Each LSE should identify and list individual uncertainties that result in significant risk or opportunity. The major uncertainties to address are those affecting forecast loads, wholesale energy prices, and LSE resource portfolios. For each of these major uncertainties, LSEs are asked to calculate a set of individual sensitivities, much like the previous descriptions of scenarios. LSEs are not being asked to calculate

sensitivities that address multiple uncertainty inputs, or to model all possible combinations of input uncertainties. This is not a requirement to conduct an integrated risk analysis that would address the sensitivities and probabilities of all uncertainties simultaneously. LSEs should focus on how their long-term resource plans can accommodate many different outcomes other than those forecast values specified or assumed on the CRATs and Energy Balance tables.

Each LSE is expected to evaluate risk according to its own unique positions, obligations, and strategies. Major uncertainty factors for most LSEs probably include proposed legislation, pending regulatory decisions, financial market requirements, and changes to California's energy markets. IOUs are expected to provide more risk analysis partly because they will be filing both a reference case and a preferred resource plan, and partly because they face greater uncertainty from the state's regulatory environment than other LSEs.

Numerous uncertainties, risks, and scenarios are involved with long-term resource planning. The following outlines reflect thinking of Energy Commission staff about key sources of uncertainty. These risks, and the management strategies to address those risks, will vary considerably among LSEs.

Core/Non-core – Departing Load

One of the largest uncertainties facing the state's IOUs is how future load obligations will be affected by policy decisions related to core/non-core, community choice aggregation, and municipalization. If IOUs procure supply resources in excess of those ultimately needed by IOU bundled customers, there may be a need to sell surplus energy in a buyers' market, or to dispatch utility-controlled capacity resources in a less efficient manner. Reducing or managing this risk in the face of load uncertainty may require a portfolio of resources with diverse durations.

IOUs are asked to evaluate a scenario under which IOU load falls as a result of future core/non-core policy decisions. The Energy Commission proposes that the IOUs submit a "low load" resource plan assuming 75percent of customers with peak demand of 500 kW³ or more will depart during 2009 – 2012 (30 percent in 2009, 15 percent in each of 2010 – 2012). Should an IOU believe that another Core/Non-core scenario provides additional information regarding the risks that it faces, it is encouraged to provide and evaluate that scenario.

An IOU may believe the straw man assumptions about load that departs to Energy Service Providers (ESP), Community Choice Aggregators (CCA), and Publicly-Owned Utilities does not accurately reflect the risks and costs of over-procurement. If so, the IOU should explain this reasoning in the narrative report.

³ It is assumed that individual customers at different sites will not to be allowed to aggregate their loads in order to reach the threshold of 500 kW.

LSEs may have a residual obligation to serve customers who have or will depart from bundled service. LSEs may be the provider of last resort in cases where a CCA or ESP becomes insolvent or incapable of delivering contractual supplies. LSEs are asked to identify how this possibility affects their resource planning, and to estimate what the risk premium costs might be for this implicit customer service responsibility.

Quantitative Analyses of Uncertainty

The foregoing subsections have discussed key uncertainties that the Energy Commission believes must be assessed. The nature of the assessment that makes the most productive use of parties' resources is less clear. The Energy Commission does not believe all of these uncertainties merit a complete simulation of how resource plans might be implemented, optimized, and hedged to guard against costly risks. Some uncertainties could substantially impact how reference case resource plans are implemented, and therefore merit a more integrated analysis. Other uncertainties with less potential impact may be illuminated with more simplistic sensitivity studies.

These instructions do not purport to address how the quantitative assessment of uncertainty of supply and demand should be addressed. Each LSE addresses uncertainty and risk according to its own obligations, positions, strategies, assessments, and decision criteria. A common set of assumptions and expectations could be developed in order to provide input to the determination of what assessment techniques could or should be used. Greater clarity is needed about what must be decided and by whom so that policy and regulatory decisions can be made with smoother integration and less overlap. Greater understanding and consensus is needed about how decision criteria can incorporate risk assessments, including weighing of attributes that may be suitable and appropriate for tradeoffs. Energy use clearly affects environmental health, public health, and economic health. How tradeoffs might be made involving reliability, rates, and environmental performance, however, is much less certain. How costs in these three areas might be quantified in support of policy-making is far less clear. Once alternative assessment techniques are better understood, the range of likely benefits and the all-in "costs" of deploying various supply and demand strategies and preferences may appear suitable for quantitative analysis.

Major Transmission Upgrades

The reference case should include an assessment of transmission constraints that may adversely affect the ability of delivering planned resources to forecast loads. IOUs are asked to submit information on how desired upgrades to the bulk transmission system would affect their preferred resource plans.

If the reference case submitted by an LSE assumes an upgrade to the bulk transmission grid that has yet to receive regulatory approval, the Energy Commission also requests submittal of a modified version of the same resource plan without the upgrade. Essentially this means a "with and without" analysis. The reference case analysis should detail the changes in the direct costs of meeting load and reserve

obligations that the upgrade makes possible, assess any additional benefits that the upgrade may provide, and explicitly state the changes in assumptions (e.g., import capability and quantities, changes in wholesale prices) in the two cases.

Deliverability

Effective resource planning requires that energy generated by projected resources be deliverable to load; the requirement that the IOUs evaluate deliverability in their long-term procurement filings was imposed in R.04-04-003.⁴ Accordingly, the Energy Commission intends to request information from the IOUs and ESPs on their projected ability to meet expected peak loads given both inter- and intrazonal transmission constraints.

The ongoing resource adequacy and procurement proceedings at the CPUC have yet to resolve how deliverability is to be evaluated; it is therefore not possible to fully determine which resources are deliverable to load. This makes it difficult to determine what data and analysis is necessary to provide policymakers with useful information regarding deliverability.

The Energy Commission could simply request load forecasts and resources within the relevant ISO local reliability areas from each of the IOUs and ESPs, but this may not provide a complete set of useful information. Some deliverability concerns arise from intrazonal transmission constraints that are not associated with local reliability areas. These may require projections of loads and available resources within areas that remain to be defined.

The Energy Commission proposes revisiting this issue at such time that consultation between the Energy Commission, CPUC, CA ISO, and IOUs can provide additional direction regarding the procurement constraints that need to be met by the IOUs to ensure local reliability, as well as the data needed to assess whether a given resource plan meets local reliability requirements.

⁴ See, for example, the Interim Order Regarding Electricity Reliability Issues dated June 28, 2004.